The man whose courage and foresight gave alternating current to America, and founded the Westinghouse industries.

George Westinghouse

Thirty years ago the alternating current system was but an infant, for whose life those who believed in it were fighting daily and nightly battles; today this same system is a giant of almost inconceivable size, so capable of defending itself that no one seeks to attack it. For 95% of the electricity that is generated and transmitted today is alternating current.

The story of the development of alternating current is a story of courage and vision and faith; of misunderstanding and misrepresentation; of engineering failures and triumphs; of commercial ability and organization. It reads like a classic romance. In its chapters are credit and honor for all who have deserved it, but the central figure, the man whose motives and acts furnished the basis of the plot, was George Westinghouse, the founder of the Westinghouse Industries.

When, in 1886, he brought over from Europe the crude Gaulard and Gibbs system, even he, great as was his foresight, did not dream of the coming magnitude of the idea which he was fostering. The development work undertaken by the strong engineers whom he put to work led at first into many serious differences with those who favored direct current. Legislatures were even importuned to prevent the use of the "deadly Westinghouse Current," as many extremists described it.

That the little 50 horsepower generators of those days have grown to sizes two thousand times as large; that stations of a few horsepower have been succeeded by stations with a capacity of hundreds of thousands of horsepower, while at the same time, distribution voltages have grown from 1,000 to 220,000, is due largely to the vision and the courage of George Westinghouse, and to the qualities of the engineers whom he called, characteristically, to help him. By no means the least of the achievements of this man was his ability to organize the greatest aggregation of engineering intelligence ever known, men of analytical ability, consummate mathematicians, great inventors; and to promote in this great group the most harmonious and intelligent co-operation.

The same energy and courage and purpose that forced the acceptance of the air brake, the modern systems for the economic and safe distribution of natural gas, and later of the steam turbine, led and won the fight for alternating current, which has grown to be one of the world's greatest and most necessary commodities.

Westinghouse

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WESTINGHOUSE ELECTRIC

Why Is Iron Magnetic?

A horse-shoe magnet attracts a steel needle. But why? We don't know exactly. We do know that electricity and magnetism are related.

In dynamos and motors we apply electro-magnetic effects. All our power-stations, lighting systems, electric traction and motor drives, even the ignition systems of our automobiles, depend upon these magnetic effects which we use and do not understand.

Perhaps if we understood them we could utilize them much more efficiently. Perhaps we could discover combinations of metals more magnetic than iron.

The Research Laboratories of the General Electric Company investigate magnetism by trying to find out more about electrons and their arrangement in atoms.

X-rays have shown that each iron atom consists of electrons grouped around a central nucleus—like planets around an infinitesimal sun. X-rays enable us to some extent to see into the atom and may at last reveal to us what makes for magnetism.

This is research in pure science, and nothing else. Only thus can real progress be made.

Studies of this kind are constantly resulting in minor improvements. But some day a discovery may be made which will enable a metallurgist to work out the formula for a magnetic alloy which has not yet been cast, but which will surely have the properties required. Such a result would be an achievement with tremendous possibilities. It would improve all electric generators, motors, and magnetic devices.

In the meantime the continual improvement in electrical machinery proceeds, in lesser steps. These summed up, constitute the phenomenal progress experienced in the electrical art during the past twenty-five years.

General Electric Company

General Office Schenectady, N. Y.

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